

Claims

What is claimed is:

1. A method for conserving power by controlling program execution in a convergence device comprising a power source and at least one processor configured to perform processing operations associated with voice call communication functions and to perform processing operations associated with data communication functions, the processor being operative to execute critical programs and noncritical programs, the method comprising the steps of:

storing for at least a given one of a plurality of noncritical programs associated with the data communication functions an identifier of at least one alternate capacity program performing substantially the same function as the given program but having a different power source capacity associated therewith; and

based at least in part on a power indicator representative of a characteristic of the power source, replacing execution of the given program with execution of the alternate capacity program, such that an amount of power source capacity utilizable for the voice call communication functions is increased.

2. The method of claim 1 wherein the power source comprises a battery.

3. The method of claim 2 wherein the power indicator is representative of a remaining capacity of the battery.

4. The method of claim 1 wherein if the power indicator is below a first threshold, execution of the given noncritical program is replaced with execution of an alternate capacity noncritical program having associated therewith a lower power source capacity than the given program.

5. The method of claim 1 wherein if the power indicator is not below a first threshold, execution of the given noncritical program is replaced with execution of an alternate capacity program having associated therewith a higher power source capacity than the given program.

6. The method of claim 1 wherein the voice call communication functions comprise one or more functions associated with cellular voice call communications.

5 7. The method of claim 1 wherein the data communication functions comprise one or more functions associated with multimedia processing at one or more of a specified data rate, a specified refresh rate and a specified display resolution.

10 8. The method of claim 7 wherein the given program performs multimedia processing at a specified data rate and the alternate capacity program performing substantially the same function as the given program performs multimedia processing at a different data rate than the given program.

15 9. The method of claim 7 wherein the given program performs multimedia processing at a specified refresh rate and the alternate capacity program performing substantially the same function as the given program performs multimedia processing at a different refresh rate than the given program.

20 10. The method of claim 7 wherein the given program performs multimedia processing at a specified display resolution and the alternate capacity program performing substantially the same function as the given program performs multimedia processing at a different display resolution than the given program.

25 11. The method of claim 1 wherein the critical programs comprise programs utilized to implement at least one of an operating system running on the processor, a graphical user interface of the convergence device, and one or more of the voice call communication functions.

12. The method of claim 1 wherein the plurality of noncritical programs are categorized based on power source capacity into at least two categories including a category at a first capacity

and a category at a second capacity, the first capacity being a lower capacity than the second capacity.

13. The method of claim 1 wherein each of at least a subset of the plurality of noncritical
5 programs may be in one of a number of states, including at least an executing state, a pending state
and a sleeping state.

14. The method of claim 4 wherein if the power indicator is below a second threshold that
is lower than the first threshold, the given noncritical program and the alternate noncritical program
10 are set to a sleeping status.

15. The method of claim 14 wherein if the power indicator is not below the second
threshold, any noncritical program having a sleeping status is set to a pending status.

16. The method of claim 14 wherein the second threshold is representative of a minimum
15 acceptable capacity for continuation of one or more of the voice call communication functions.

17. The method of claim 1 wherein the processor is operative to store a list of the noncritical
programs with associated capacities for one or more of the noncritical programs.
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18. The method of claim 1 wherein the processor comprises a multithreaded processor.

19. A convergence device comprising:

a power source; and

25 at least one processor configured to perform processing operations associated with
voice call communication functions and to perform processing operations associated with data
communication functions, the processor being operative to execute critical programs and noncritical
programs;

the convergence device storing for at least a given one of a plurality of noncritical programs associated with the data communication functions an identifier of at least one alternate capacity program performing substantially the same function as the given program but having a different power source capacity associated therewith;

5 wherein based at least in part on a power indicator representative of a characteristic of the power source, execution of the given program is replaced with execution of the alternate capacity program, such that an amount of power source capacity utilizable for the voice call communication functions is increased.

10 20. An article of manufacture comprising a machine-readable storage medium having embodied thereon program code for use in conserving power by controlling program execution in a convergence device comprising a power source and at least one processor configured to perform processing operations associated with voice call communication functions and to perform processing operations associated with data communication functions, the processor being operative to execute
15 critical programs and noncritical programs, wherein the program code when executed by the processor implements the steps of:

 storing for at least a given one of a plurality of noncritical programs associated with the data communication functions an identifier of at least one alternate capacity program performing substantially the same function as the given program but having a different power source capacity
20 associated therewith; and

 based at least in part on a power indicator representative of a characteristic of the power source, replacing execution of the given program with execution of the alternate capacity program, such that an amount of power source capacity utilizable for the voice call communication functions is increased.